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10/614,924

07/08/2003

Robert Radulescu

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EXAMINER

MAKI, STEVEN D

ART UNIT

PAPER NUMBER

1733

| SHORTENED STATUTORY PERIOD OF RESPONSE | MAIL DATE | DELIVERY MODE |
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3 MONTHS

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PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary

Application No.

10/614,924

Applicant(s)

RADULESCU, ROBERT

Examiner

Steven D. Maki

Art Unit

1733

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 14 December 2006.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-11 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-11 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

Art Unit: 1733

- 1) The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

- 2) Claims 1-11 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claims 1 and 4 are ambiguous. Claim 1 recites "at least two of said ribs being intermediate such two edge ribs" (emphasis added) and "the at least one intermediate rib having a plurality of incisions" (emphasis added). Claim 4 recites "the at least one rib provided with incisions" (emphasis added). There is no clear antecedent basis for "the least one intermediate rib" in claim 1. It is unclear if claim 1 and claim 4 require (a) at least one intermediate rib having incisions or (b) at least two intermediate ribs having a plurality of incisions. It is suggested to (1) change "the at least one intermediate rib having a plurality of incisions" in claim 1 to --each of the intermediate ribs having a plurality of incisions-- and (2) change "the at least one rib provided with incisions" in claim 4 to --the intermediate ribs provided with incisions--.

Claim 4 is ambiguous. Claim 1 recites "the two edge ribs are free of incisions having varying inclination" (emphasis added). Claim 4 recites "the at least one rib not provided with incisions of varying inclination" (emphasis added). Since there is no clear antecedent basis for "the at least one rib not provided with incisions of varying inclination" (claim 4), the total outer surface area S_{ne} in claim 4 is ambiguous. In claim 4, it is suggested to change "the at least one rib not provided with incisions of varying inclination" to --the edge ribs not provided with incisions of varying inclination--.

In claims 1 and 9, the scope of "each incision includes a generally concave side and a generally convex side, the generally concave side facing generally toward the outer surface" is ambiguous. It is unclear if this language broadens and/or narrows the subject matter of the varying angular relationship / inclination and the location of the radially innermost point.

Claim 9 has been amended to require Sne (a single value) to be total surface "areas" (plural values) instead of "total surface area" (a single value). This change is confusing and not understood. It appears that "areas" is a typographical error, which should be corrected to --area--. It is emphasized that the Sne being areas (not a total) is a different concept from Sne being the sum of areas (a total). It is noted that claims 4 and 6 describe --area-- instead of "areas". In claim 9, it is suggested to change both occurrences of "areas" to --area--.

3) The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

4) Claims 1-11 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

In claims 1 and 9, the subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the

Art Unit: 1733

inventor(s), at the time the application was filed, had possession of the claimed invention (i.e. the new matter) is the subject matter of "each incision includes a generally concave side and a generally convex side, the generally concave side facing generally toward the outer surface". The terms "generally concave", "generally convex" and "facing generally toward" are not described and/or defined in the original disclosure. It is not seen how original figures 2 and 3 supports "generally concave", "generally convex" and "facing generally toward".

5) The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6) **Claims 1-11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Europe 104 (EP 810104) in view of Sloman et al (US 2,186,180) and MacMillan (US 3,909,906).**

Europe 104 discloses a pneumatic radial tire for winter or all season use. The tire has a tread wherein the tread may include blocks wherein each block has sipes (incisions) of varying inclination. Europe 104 use the sipes of varying inclination to improve longitudinal adherence (grip) on a road surface. See col. 1 lines 3-6 of Europe 104. Europe 104 discusses the problem of wear of the edges of the sipes (incisions). See col. 2 and column 4 of Europe 104. Europe 104 teaches increasing the inclination of the sipes (incisions) with respect to the radial direction toward the bottom of the incision for the benefit of reducing wear at the edges of the incisions and obtaining good

braking and traction properties. The sipes (incisions) may have a width of 0.2 to 1 mm. The sipes "... define a portion of a cylindrical surface over at least part of their radial and lateral area" (abstract, emphasis added). In figure 4, Europe 104 shows a block having five sipes wherein the inclination of the sipe with respect to the radial direction increases from the tread surface toward the bottom of the sipe. The sipes are arranged in the tread of the tire such that a radially innermost point of each sipe is located relative to the rolling direction of the tire, in front of the point of the sipe located on the running surface of the tread when new. See figures 4 and 5. Europe 104 teaches that the curve of the sipe may be extended by a rectilinear portion as shown in figures 14 and 15. As can be seen from figure 15, the sipe forms an angle of zero degrees with respect to the radial direction (line extending perpendicular to the point where the incision intersects the tread surface) for about 1/3 of the depth of the sipe and has a larger angle with respect to the radial direction thereafter. At col. 6 lines 6-13, Europe 104 teaches using the sipes in a rib. Europe 104 is silent as to the tread having at least three ribs.

As to claim 1, it would have been obvious to one of ordinary skill in the art to provide Europe 104's tread with at least four ribs wherein at least the intermediate ribs comprise Europe 104's sipes (incisions) since (1) Europe 104 teaches that the tire, which may be either a winter tire or an all season tire, may have the sipes (incisions) in a rib and (2) Sloman et al suggests using slits (incisions) in ribs of a tire for use on wet and snow covered surfaces (figure 12). With respect to width less than 3 mm, Europe 104 teaches sipes (incisions) having a width of 0.2 to 1 mm. With respect to the angular relationship being zero degrees for 1/3 of the incision depth E, Europe 104 teaches

forming the sipes (incisions) with an angular relationship of zero degrees for about 1/3 of the sipe depth. See figure 15.

With respect to the edge ribs, it would have been obvious to one of ordinary skill in the art to provide Europe 104's tread with ribs and incisions such that the edge ribs are free of incisions having varying inclination and at least two of the intermediate ribs have the incisions having varying inclination in view of Sloman et al' suggestion to use uncut shoulder ribs to reduce noise (figure 13, four non-siped ribs and three sipes ribs). Hence, Europe 104 and Sloman disclose using sipes (incisions) in ribs of a tire tread. Sloman discloses using slits (incisions) in only some ribs as being an alternative to using slits (incisions) in all of the ribs (page 5 lines 63-72). Sloman recognizes that an uncut rib has lower noise than a cut rib (page 2). Sloman teaches one of ordinary skill in the art to use a tread having both uncut shoulder ribs (edge ribs free of incisions) and intermediate ribs having slits (incisions) to obtain increased traction and resistance to skidding (due to the cut ribs) while at the same time reducing noise (due to the uncut ribs). Sloman motivates one of ordinary skill in the art therefore to use Europe 104's incisions in intermediate ribs but not the shoulder ribs in order to obtain improved braking properties and traction as per the teachings of Europe 104 while at the same time reducing noise.

With respect to indicating means, it would have been obvious to one of ordinary skill in the art to provide Europe 104's tire with means / visual indicator indicating the rolling direction since (1) Europe 104 teaches orienting the sipes with respect to a

Art Unit: 1733

specified rolling direction and (2) MacMillan suggests providing arrows on tires to indicate rotation of the tire.

With respect to crown reinforcement, it would have been obvious to one of ordinary skill in the art to provide Europe 104's pneumatic radial tire with a crown reinforcement since it is taken as well known / conventional per se in the tire art to provide a pneumatic radial tire with a crown reinforcement (belt). The description of "for a heavy vehicle" relates to intended use. The description of "steer axle" before "tire" describes the intended use of the tire instead of additional structure of the tire. None of the present claims require a tire mounted on a steer axle. It is also noted that steer axle is generic to a driving axle or a non-driving axle.

As to claims 2, 3 and 5, it would have been obvious to provide Europe 104's sipe (incision) such that the average inclination of the sipe is 5-15 degrees (claim 2) / the inclination of a portion of the sipe at a depth greater than $\frac{1}{3}$ E is between 5-25 degrees (claims 3 and 5) since Europe 104 teaches curving the sipe (incision) in the depth direction along an arc having a radius of $\frac{1}{2}$ to 10 times (or $\frac{1}{2}$ to 3 times) the total radial depth of the sipe.

As to claims 4, 6 and 9 (formula), it would have been obvious to one of ordinary skill in the art to provide Europe 104's tread with ribs and incisions such that the claimed relationship is satisfied in view of Sloman et al's teaching to (a) space slits (incisions) at 0.3 inch to 1.25 inches (7.6 mm to 31.8 mm), (b) use a slit (incision) depth such as $\frac{1}{3}$ to $\frac{1}{2}$ groove depth and (c) use uncut ribs to reduce noise (figure 13, four non-siped ribs and three sipes ribs); it being noted that since units such as mm, inch, mm², etc. are not

Art Unit: 1733

specified for the pitch, depth and areas, the claimed relationship is sufficiently broad to read on incisions arranged according to the teachings of Sloman et al.

As to claim 7, Europe 104 teaches sipes (incisions), which are curved in the tread thickness direction.

As to claim 8, Europe 104 teaches that the sipe (incision) may comprise a rectilinear part at each end (col. 6 lines 25-27).

As to claims 10 and 11, Sloman suggests not using any incisions in the shoulder ribs (edge ribs).

Remarks

7) Applicant's arguments filed 12-14-06 have been fully considered but they are not persuasive.

Applicant argues that the presently claimed invention omits inclined incisions in the edge ribs of a steer axle tire in order to make the wear rate more closely approximate that of the intermediate ribs. This unexpected results argument is not commensurate in scope with the claims since none of the present claims require a tire mounted on a steer axle of a heavy vehicle. The description of "steer axle" before "tire" indicates the intended use of the tire instead of additional specific structure. It is emphasized that the same tire can be mounted on a steer axle (non-drive axle) or a drive axle. Nothing in the pending claims precludes the claimed tire from being mounted on a drive axle.

Applicant argues that Europe 104 is not concerned with the wear rate of the tread which is the concern of the presently claimed invention. This argument is not

persuasive because (1) Europe 104, like applicant, is concerned with incisions having varying inclination in the radial direction and (2) the claimed invention has not been compared with Europe 104 (the closest prior art).

Applicant comments that Europe 104 discloses tire treads having ribs, all of which possess inclined incisions. Examiner comments that Sloman discloses a tire tread having incisions in some of the ribs (e.g. figure 12) or all of the ribs (figure 5). Sloman teaches one of ordinary skill in the art to use a tread having both uncut shoulder ribs (edge ribs free of incisions) and intermediate ribs having incisions to obtain increased traction and resistance to skidding (due to the cut ribs) while at the same time reducing noise (due to the uncut ribs). See figure 12. Sloman motivates one of ordinary skill in the art therefore to use Europe 104's incisions in intermediate ribs but not the shoulder ribs in order to obtain improved braking properties and traction as per the teachings of Europe 104 while at the same time reducing noise.

Applicant argues that it would be counterintuitive to minimize the number of ribs having Europe 104's inclined incisions since the purpose of providing the inclined incisions to create a self-sharpening edges in the tread which better grip the surface over which the tire is traveling. Examiner agrees that Europe 104 teaches improving on prior art incisions, which are perpendicular to the tread surface, by varying the inclination of the incisions in the depth direction. Examiner adds that Sloman et al teaches using incisions, which are perpendicular to the tread surface, in intermediate ribs but not shoulder ribs (figure 12). When viewed as a whole, the prior art to Europe 104 and Sloman suggest an improved tread having incisions in intermediate ribs but not

shoulder ribs (Sloman) wherein the inclination of the incisions varies in the depth direction (Europe 104). The benefits of using incisions in the intermediate ribs but not shoulder ribs includes increased traction and reduced noise. See Sloman. The benefits of using incisions whose inclination varies in the radial direction includes improved grip. See Europe 104. It is emphasized that Sloman teaches using incisions for increasing traction in some of the ribs (figure 12) as being an alternative to using incisions for increasing traction in all of the ribs (figure 5).

Applicant argues that claims 1 and 9 distinguish over Europe 104 by reciting that (1) each incision includes a generally concave side and generally convex side, the generally concave side facing generally toward the tread's outer surface and (2) a radially innermost point of each incision is located, relative to the indicated rolling direction of the tire, in front of the point of the incision located on the tread's outer surface. Applicant is incorrect because the direction of the force F is the opposite of the direction of the varying inclination incision toward the bottom of the incision. In figure 4 of Europe 104, the direction of force F is to the left whereas the direction of the varying inclination side (incision) toward the side bottom is toward the right.

8) No claim is allowed.

9) Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

Art Unit: 1733

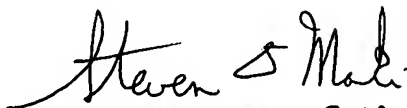
A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

10) Any inquiry concerning this communication or earlier communications from the examiner should be directed to Steven D. Maki whose telephone number is (571) 272-1221. The examiner can normally be reached on Mon. - Fri. 8:30 AM - 5:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Richard Crispino can be reached on (571) 272-1226. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Steven D. Maki
March 18, 2007


STEVEN D. MAKI 3-18-07
PRIMARY EXAMINER